

**REMARKS**

Regarding the Information Disclosure Statement, Applicants request reconsideration of the three Japanese documents cited on the PTO-1449 Form filed by Applicants on August 25, 2000 (copy enclosed). Although the Office Action states that the Office is not required to consider these references since no English translation was provided for each of them, the Examiner is requested to consider each of the references in view of the documents as submitted and as described in the specification under the description of the Background Art on pages 1 and 2 of the specification. If the Examiner requires a translation of any portions of the references listed, please provide Applicants with the request.

Figs. 1 and 7 have been corrected to show the electrical connection between the transformer 271 and the AC-DC converter 272a, as required.

The specification has been amended on page 11 to make the correction noted by the Examiner with respect to referring to devices 25 and 26 as electromagnet control devices. Further, several instances of the phrase "by the way" have been omitted.

Applicants have amended claim 8 to change the phrase "PWM scheme" to "PWM control". The amendment finds antecedent

support in the specification at page 23, lines 3 and 10, which refer to PWM control unit 276, for example.

Claims 1-8 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al in view of Robertson et al and Takegami. Applicants request reconsideration of the rejection in view of the foregoing amendments and for the following reasons.

With respect to independent claim 1, the claim requires a first scanning electromagnet and a second scanning electromagnet. The scanning of a charged particle beam with the second scanning electromagnet is in a second direction intercrossing with the first direction of scanning with the first scanning electromagnet. Further, each of the first and second power supplies for respectively applying a voltage to the first and second scanning electromagnets includes a first power supply unit having no filter and a second power supply unit having a filter, respectively.

As a result of the claimed arrangement, when a position of the radiation of the charged particle beam is changed in a first direction from one position to another, it is possible to change the applied voltage to the first scanning electromagnet in a short time with the first power supply unit which has no filter for the first power supply. Further, it is possible to change the position of the charged particle

beam in a second direction, which intercrosses with the first direction, by applying a voltage to the second scanning electromagnet in a short time with the first power supply unit that has no filter for the second power supply. Since the first power supply units have no filter, there is no delay element as opposed to the second power supply unit, which has a filter.

With the second power supply unit of each of the first and second power supplies, on the other hand, the charged particle beam can be controlled precisely. The control is achieved by applying a voltage to the corresponding first and second scanning electromagnets with the pulsating component eliminated by the filter. In this manner, displacement of the position of the charged particle beam can be minimized for uniformly applying the charged particle beam to an irradiation area.

With respect to independent claim 4, the first and second power supplies for the respective first and second scanning electromagnets include a first inverter for outputting a DC voltage and no filter, and a second inverter for outputting a DC voltage with a DC filter connected to the output port thereof in series. Further, the first scanning electromagnet is connected to the first inverter and the DC filter in the first power supply and the second scanning electromagnet is

connected to the first inverter and the DC filter in the second power supply. As a result of the arrangement set forth in claim 4, the same advantages can be achieved as discussed above with respect to claim 1.

With respect to Nakamura et al (Nakamura), an electron beam apparatus is disclosed in which the electron beam is irradiated on a combustion exhaust gas flow in a flow path 19 through an irradiation window 15 to remove hazardous components in the combustion exhaust gas. The beam is generated by a thermal electron generating source 12 by applying high voltage DC from the power supply device 10. A magnetic field is used for deflecting and scanning the electron beam that is applied by a scanning electromagnet 17. However, the reference is silent with respect to disclosing the claim limitation wherein each of the first and second power supplies, respectively for the first and second scanning electromagnets, includes a first power supply unit with no filter and a second power supply unit with a filter or a first inverter for outputting a DC voltage and no filter and a second inverter for outputting a DC voltage with a DC filter.

Robertson et al (Robertson) discloses an ion injection scanning apparatus for injecting ions into a manufacturing object such as a semiconductor wafer. The ion injection scanning apparatus comprises a Y-scanning plate 40 and an X-

scanning plate 42. The ion beams are projected in a beam scanning pattern shown in Fig. 3 by applying an appropriate voltage to the scanning plates. However, Robertson does not disclose the claimed combination set forth in the pending claims of the present application.

Takegami is also deficient in disclosing the claimed arrangement set forth in the pending claims. Takegami discloses an energization forming apparatus as shown in Fig. 18. The display device has an electron releasing element 310 and a control circuit 318 that controls the row side power source 311, the column side power source 313 and the row and column wiring selected portions 312, 314. The row side power source 311 has a power supply 401 and a filter circuit 402 and the column side power source 313 has a power supply without a filter circuit. However the reference does not suggest the combination claimed by Applicants in which the first and second power supplies respectively for the first and second scanning electromagnets include a first power supply unit having no filter and a second power supply unit having a filter, respectively. Therefore, the combination of Takegami with Robertson and Nakamura et al is insufficient to render the invention obvious under 35 U.S.C. 103(a). Accordingly, the rejection should be withdrawn.

Applicants have added new claims 11-21, which are dependent claims. The pending dependent claims not discussed specifically above set forth additional limitations and further each of these claims includes the limitations of the base claim from which it depends, so none of these claims are disclosed or suggested by the art of record.

With respect to the provisional double patenting rejections, note that claims 1-8 of copending application No. 10-287,656 were canceled by Applicants in an Amendment filed November 5, 2002. Accordingly, the rejection should be withdrawn.

In view of the foregoing amendments and remarks, pending claims 1-8 and 11-21 should be found to be allowable over the art of record. Accordingly, reconsideration and reexamination are respectfully requested.

Respectfully submitted,



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